Alcatel-Lucent
End-to-End IMS Solution

Bringing IMS and the Internet together

Alcatel·Lucent

Traditional service providers now face competition from Internet players who have developed conversational services, such as IM and VoIP, based on the Internet architecture and Web 2.0. Alcatel-Lucent offers solutions built on our IMS architecture, configurable to address the unique needs of each service provider as they deal with the changing competitive landscape and the latest communications trends. With a user-oriented approach, the Alcatel-Lucent End-to-End IMS Solution lets service providers offer interpersonal communication (using web, multimedia, messaging and conversational services), user-experience continuity across devices and networks, instant access anywhere and self-service personalization, delivering blended lifestyle services to consumers and enterprise users.

The changing competitive landscape

The rapid rise of Internet Protocol Multimedia Subsystem (IMS) and Web 2.0 technologies has, in many ways, lowered the barriers to market entry for organizations that want to compete with traditional telecommunications providers. As a result, a growing number of service providers now must consider companies such as Google and Yahoo as significant competitors for consumer and business-subscriber revenues. You are under intense pressure to rapidly move away from rigid network infrastructures and service delivery platforms. At some point in the future, these environments will be replaced by a standard, open and more flexible IP network infrastructure that can accommodate:

• Multiple traffic types (voice, data, video)

• A variety of access types (wired and wireless)

• Various Quality of Service (QoS) performance requirements

• A variety of new and emerging business models

In the meantime, incumbent telecom operators must develop a hybrid migration strategy that leverages existing network infrastructures to enable a new generation of services. To meet these new demands, you will need to offer consumers and businesses the ability to mix and match capabilities at will: voice, data, video over broadband-wired or -wireless infrastructures.

This transformation must be executed while designing an end-to-end architecture that will cost-effectively guide you toward an optimal next-generation networking environment.

Alcatel-Lucent offers customized solutions built upon our IMS architecture to address the unique needs of each service provider as you deal with the latest communication trends and the changing competitive landscape. While continuing to offer enhanced premium VoIP services, the Alcatel-Lucent End-to-End IMS Solution focuses on a user-oriented approach, so you can offer interpersonal communications using web, multimedia, messaging and conversational services, user-experience continuity across devices and networks, instant access anywhere and self-service personalization, delivering blended lifestyle services to your consumers and enterprise users.

A major wireless telco we interviewed sees access agnosticism as the biggest draw: "We don't want more vertical services, we want 'service delivery over anything', so we want everything available over our existing 3G interface, and the ability to transfer that whole environment to DSL. If everything is managed for you via (the IMS) network, then all your information is magically transferred to your PC, or whatever device you're using — and that's a really powerful proposition for users, and very important to us."

Heavy Reading, July, 2007

Anytime, anywhere, on any device

The Alcatel-Lucent End-to-End IMS Solution is designed for fixed, mobile and converged networks. It supports multiple access technologies, including Code Division Multiple Access (CDMA), Worldwide Interoperability for Microwave Access (WiMAX), Global System for Mobile Communications/Universal Mobile Telecommunications System (GSM/UMTS), and any digital subscriber line (xDSL).

The solution is composed of network elements spanning the application, session control and connectivity layers. All products are IMS compliant, carrier grade, based on open standards and IT platforms, and have been fully tested in leading industry standards and interoperability forums: the Global System for Mobile Communications Association (GSMA), Open Mobile Alliance (OMA), Internet Engineering Task Force (IETF) and the Multiservice Switching Forum (MSF).

Integrating a Web 2.0 front end with IMS features in various web environments, such as Network Address Book (NAB) and Presence Management, creates a cost-effective way to offer IMS services such as:

- Consumer VoIP
- Voice Call Continuity (dual-mode service)
- Video share
- Enabling new applications through Web 2.0 and widget mashups

Alcatel-Lucent Compact IMS

The Alcatel-Lucent Compact IMS supports up to 160,000 subscribers, and provides a suitable architecture for trials and for cost-effective deployments by Tier-2 operators. This product reduces costs by providing internal components for the Home Subscriber Server (HSS), Charging Collection Function (CCF) and Lawful Intercept functions. It provides Session Management,

platform operations, administration and maintenance (OA&M), HSS, CCF, Internal Lawful Intercept Delivery Function (ILIDF) and Telephony Application Server functions, as an integrated package on a single shelf.

User-centric approach

Increasingly, today's users want personalized text, data, voice and video anywhere, anytime, on any device. The Alcatel-Lucent user-centric approach allows you to offer the services you customers are looking for — adding value to the end customer and new revenue opportunities for you. By focusing on the overall user experience, rather than the specific technology or individual products to be offered, the Alcatel-Lucent End-to-End IMS Solution can be phased in to ensure the "right fit" for interpersonal communications, user-experience continuity across devices and networks, instant access anywhere and self-service personalization.

Phased approach

Alcatel-Lucent offers a three-step approach to implementing Internet communications. You can start with any step now, then phase in the others if and when it makes sense for your business.
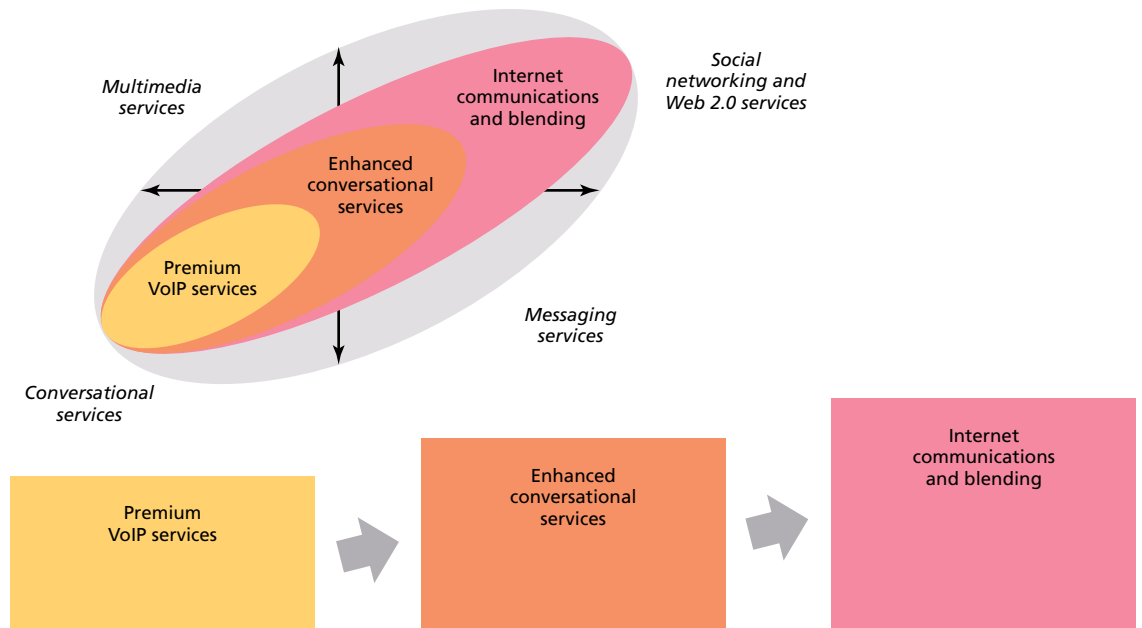
The three-step approach shown in Figure 1 lets you extend your offers to include Consumer VoIP and a wide range of advanced Internet communications services:

- Premium VoIP services: Provide your customers with legacy and multimedia communications services on web pages, blending with VoIP, IM, presence and other IP-based offerings. And, let them personalize these services themselves using a web front end/interface.

- Enhanced conversational services: Give users continuity across networks and devices, multimedia communications with multiple communities and instant personalization.

- Internet communications and blending: Alcatel-Lucent is developing a Web 2.0 front end for the IMS Application Server Suite to give you the strength of IMS standards with Web technologies, and offer personalized and blended services across multiple devices.

Figure 1. The three-step approach to implementing Internet communications

Multimedia services

Social networking and Web 2.0 services

Internet communications and blending

Enhanced conversational services

Premium VoIP services

Messaging services

Conversational services

Premium VoIP services → Enhanced conversational services → Internet communications and blending

Cost-effective IP transformation

The Bell Labs Total Cost of Ownership Study (2008) compared Alcatel-Lucent IMS, Alcatel-Lucent softswitch offers and competitors' softswitch offers, and demonstrated that Alcatel-Lucent IMS is the most cost-effective offer. The Alcatel-Lucent IMS Solution provides the following benefits.

REDUCTION IN RECURRING OPEX

Alcatel-Lucent IMS offers a highly concentrated and efficient subscriber-provisioning engine whose automation and low provisioning fallout rate offer better recurring OPEX.

It provides one element management system (EMS) on a single server connecting and coordinating subscriber translations for the entire core networks, and a single system for all fault and performance information also lower OPEX.

GREATER CAPEX SAVINGS

Alcatel-Lucent IMS needs fewer servers at most network sites and provides improvements in security hardening procedures and single access point EMSs, improving installation and turn up and thereby providing greater capital expenditure (CAPEX) savings.

HIGHER PENETRATIONS OF IP-TO-IP TRAFFIC ACCENTUATE THE IMS ARCHITECTURE'S BETTER TOTAL COST OF OWNERSHIP

The Bell Labs study examined a single application: VoIP. Multiple and multimedia applications further tip the customer-expenditure scale in favor of IMS solutions over softswitch or point solutions.

The Alcatel-Lucent IP Transformation Solution is a suite of services that enables wireline and wireless network operators to transform an existing legacy network and services portfolio to a next-generation technology and services offering in a controlled and managed way. According to the Bell Labs Study, this solution reduces OPEX by up to 12 percent per year and CAPEX by 5 percent to 30 percent, depending on the size of the network, and increases revenue in established, complex legacy networks, generally spread over dispersed geographic boundaries. If you have wireline and wireless assets, you can leverage the IP Transformation Solution to evolve the two networks into a single, converged infrastructure.

The transformed core network then provides the foundation for realizing cost reductions — through the transition to a more efficient IP-based network, and enabling new services.

Alcatel-Lucent can help you design and deploy a hybrid migration strategy that leverages existing network infra-structures to enable a new generation of services. These services will offer consumers and businesses the ability to mix and match capabilities at will: voice, data and video over broadband wired or wireless infrastructures.

Alcatel-Lucent delivers the capability to migrate current infrastructures to an all-IP network, potentially reducing the OPEX up to 26% (Source: Bell Labs modeling)
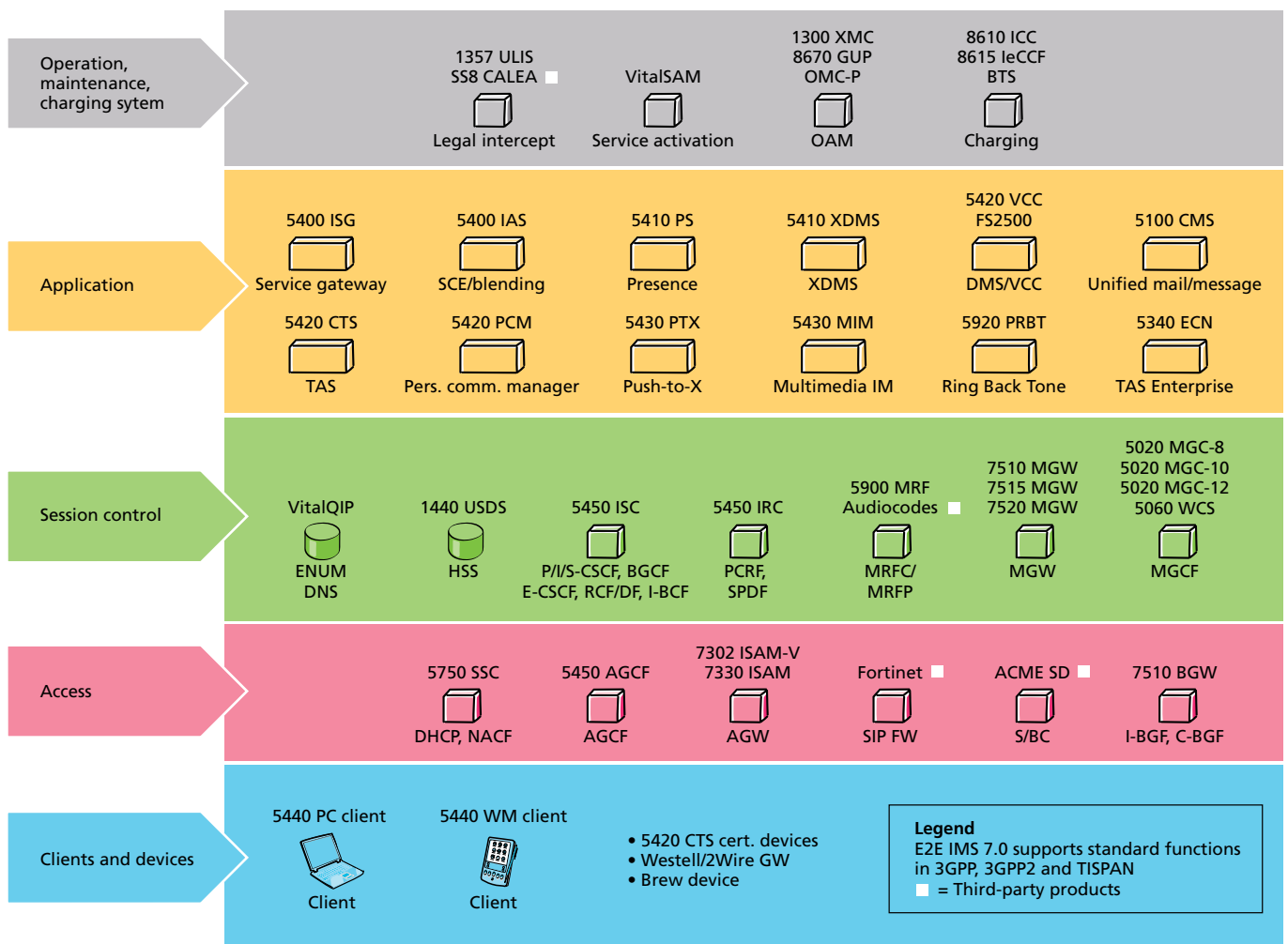
The end-to-end IMS environment

Service Creation Environment

For service delivery, Alcatel-Lucent proposes an IMS and Web 2.0 Service Creation Environment (SCE) in which operators can deliver, aggregate and manage converged communications services for subscribers, regardless of networks or devices. The solution enables VoIP, fixed-mobile convergence (FMC) and personalized blended services with a common platform strategy, providing subscribers with a consistent user experience with multiple sessions across diverse access methods.

Figure 2: Alcatel-Lucent E2E IMS elements

Operation, maintenance, charging sytem				
1357 ULIS SS8 CALEA ☐ Legal intercept	VitalSAM Service activation	1300 XMC 8670 GUP OMC-P OAM	8610 ICC 8615 IeCCF BTS Charging	

Application

5400 ISG Service gateway	5400 IAS SCE/blending	5410 PS Presence	5410 XDMS XDMS	5420 VCC FS2500 DMS/VCC	5100 CMS Unified mail/message
5420 CTS TAS	5420 PCM Pers. comm. manager	5430 PTX Push-to-X	5430 MIM Multimedia IM	5920 PRBT Ring Back Tone	5340 ECN TAS Enterprise

Session control

VitalQIP ENUM DNS	1440 USDS HSS	5450 ISC P/I/S-CSCF, BGCF E-CSCF, RCF/DF, I-BCF	5450 IRC PCRF, SPDF	5900 MRF Audiocodes ☐ MRFC/ MRFP	7510 MGW 7515 MGW 7520 MGW MGW	5020 MGC-8 5020 MGC-10 5020 MGC-12 5060 WCS MGCF

Access

5750 SSC DHCP, NACF	5450 AGCF AGCF	7302 ISAM-V 7330 ISAM AGW	Fortinet ☐ SIP FW	ACME SD ☐ S/BC	7510 BGW I-BGF, C-BGF

Clients and devices

5440 PC client — Client
5440 WM client — Client

- 5420 CTS cert. devices
- Westell/2Wire GW
- Brew device

Legend
E2E IMS 7.0 supports standard functions in 3GPP, 3GPP2 and TISPAN
☐ = Third-party products

SERVICE DELIVERY ENVIRONMENT

The Alcatel-Lucent Service Delivery Environment (SDE) uses common enablers, the power of IMS architecture and other Session Description Protocols to realize new revenue-generating services. This helps meet the demands to offer mix-and-match capabilities at will.

The Alcatel-Lucent SDE is a carrier-grade framework that can bridge multiple domain-specific service delivery platforms to share functionality among them, taking advantage of common enablers, and exploiting network transformation.

The power of IMS-enabled inter-personal communication services can be combined with other Session Description Protocols (such as IPTV, messaging, content delivery) to offer a whole range of newly converged services. These new IMS voice-equipped services can then be delivered to multiple screens (such as a PC, TV or mobile device) while sharing common service enhancements (presence, location, converged rating and charging) and operations support system/business support system (OSS/BSS) components. IMS, compared to a simple softswitch VoIP solution, provides a solid foundation to build an SDE vision.

Service Delivery Platform

Alcatel-Lucent defines a Service Delivery Platform as a well architected set of components that optimize the delivery of a particular type of service.

The Alcatel-Lucent Service Delivery Platform includes application servers, delivery support systems, session control elements and the required management and OSS/BSS. Each Session Description Protocol is standards based, optimized for a type of service, and has its own protocols and means of session control.

Key features

Interpersonal communications
Communicate with friends, family and colleagues, with the most appropriate communications tools, using web, media, messaging or conversational services.

User-experience continuity
Experience the same communications services continuously across devices and among fixed, mobile, WiMAX and the Internet.

Instant access anywhere
Communicate instantly with any contact, at home, in the office or on the road, regardless of device or network used (fixed, mobile, WiMAX or the Internet).

Self-service personalization
Non-intrusive and personalized instant communications using web interfaces: how and when to be contacted, sharing presence information, and managing contacts in one place.
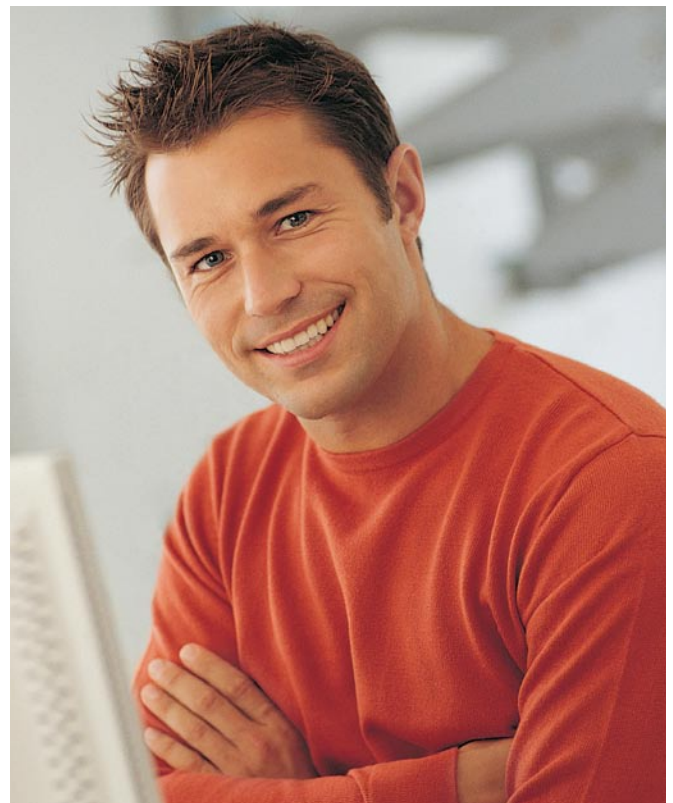
Building seamless Internet communications

As an established leader in next-generation access and core-network solutions, Alcatel-Lucent is the right partner to assist in every phase of an IP-core network transformation — from business case development, through planning and design, to interoperability testing and integration, to migration of traffic to the new network, and optimization of the transport network.

Alcatel-Lucent Services, an end-to-end multivendor integrator with broad experience in deploying both wireless and wireline networks, can integrate all elements of the IP-core Transformation solution, including the session control servers, signaling gateways, and media gateways, application servers and OSS that support the new elements. After these elements are integrated into the carrier network, Alcatel-Lucent consultants can work with you to determine the best strategy for migrating commercial traffic from the existing circuit-switched core to the new infrastructure. Our consultants can help optimize the transport network based on the reduced backhaul needs of the new core, to further reduce operating costs.

Alcatel-Lucent has the most comprehensive IMS portfolio in the industry, with more than 30 customer deployments, 60+ trials with large providers worldwide, and over 50 customers using IMS application servers and services.

With the end-to-end combination of solutions, professional services and consulting, we can help you evolve to a complete IMS infrastructure.

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